

WHAT IS CLAIMED IS:

1. An isolated soluble complex comprising at least
6 amino acids of the mature protein portion of SEQ ID NO:
5 2 or 4, and:
 - a) at least 6 amino acids of the mature protein
portion of SEQ ID NO: 12 or 13; or
 - b) at least 6 amino acids of the mature protein
portion of the CNTF-R.
- 10 2. The complex of Claim 1, wherein said complex:
 - a) comprises a recombinant polypeptide of mature SEQ
ID NO: 2 or 4;
 - 15 b) comprises a recombinant polypeptide of mature SEQ
ID NO: 12 or 13;
 - c) comprises a recombinant polypeptide of mature
CNTF-R;
 - d) comprises both a recombinant polypeptide of
mature SEQ ID NO: 2 or 4, and a recombinant
20 polypeptide of mature SEQ ID NO: 12 or 13;
 - e) comprises both a recombinant polypeptide of
mature SEQ ID NO: 2 or 4, and a recombinant
polypeptide of mature CNTF-R;
 - f) is detectably labeled;
 - 25 g) is in a buffered solution; or
 - h) is in a sterile solution.
3. The complex of Claim 1, which:
 - a) comprises a mature IL-B60 polypeptide;
 - 30 b) comprises a mature CLF-1 polypeptide;
 - c) comprises a mature CNTF-R polypeptide;
 - d) exhibits at least four nonoverlapping segments of
at least seven amino acids of SEQ ID NO: 2 or 4;
 - e) exhibits epitopes from both primate L-B60 and
35 primate CLF-1;

- f) exhibits epitopes from both primate L-B60 and primate CNTF-R;
 - g) is not glycosylated;
 - h) is attached to a solid substrate;
 - 5 i) is conjugated to another chemical moiety; or
 - j) comprises a detection or purification tag, including a FLAG, His6, or Ig sequence.
4. A kit comprising said complex of Claim 1, and:
- 10 a) a compartment comprising said complex; or
 - b) instructions for use or disposal of reagents in said kit.
5. An isolated or recombinant polypeptide
- 15 comprising:
- a) a first segment comprising at least seven amino acids identical to segments of SEQ ID NO: 2 or 4, and a second segment comprising at least seven amino acids identical to segments of mature SEQ ID NO: 12 or 13;
 - 20 b) at least two distinct nonoverlapping segments of at least five amino acids identical to segments of mature SEQ ID NO: 2 or 4, and a third segment comprising at least seven amino acids identical to segments of mature SEQ ID NO: 12 or 13;
 - 25 c) at least one segment comprising at least seven amino acids identical to segments of mature SEQ ID NO: 2 or 4, and two distinct nonoverlapping segments of at least five amino acids identical to segments of mature SEQ ID NO: 12 or 13;
 - 30 d) a first segment comprising at least seven amino acids identical to segments of SEQ ID NO: 2 or 4, and a second segment comprising at least seven amino acids identical to segments of mature primate CNTF-R;
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- 5 e) at least two distinct nonoverlapping segments of
at least five amino acids identical to segments
of mature SEQ ID NO: 2 or 4, and a third segment
comprising at least seven amino acids identical
to segments of mature primate CNTF-R; or
- 10 f) at least one segment comprising at least seven
amino acids identical to segments of mature SEQ
ID NO: 2 or 4, and two distinct nonoverlapping
segments of at least five amino acids identical
to segments of mature primate CNTF-R.

6. The polypeptide of Claim 5, wherein said
distinct nonoverlapping segments of identity:
- 15 a) include one of at least eight amino acids;
b) include one of at least five amino acids and a
second of at least six amino acids;
c) include at least three segments of at least four,
five, and six amino acids, or
d) include one of at least twelve amino acids.

- 20 7. The polypeptide of Claim 5, which:
- a) comprises a mature IL-B60 sequence;
b) comprises a mature CLF-1 sequence;
c) comprises a mature CNTF-R sequence;
- 25 d) exhibits at least four nonoverlapping segments of
at least seven amino acids of SEQ ID NO: 2 or 4;
e) has a length at least about 30 amino acids;
f) exhibits epitopes from both primate IL-B60 and
primate CLF-1;
- 30 g) exhibits epitopes from both primate IL-B60 and
primate CNTF-R;
h) is not glycosylated;
i) has a molecular weight of at least 30 kD;
j) is a synthetic polypeptide;
- 35 k) is attached to a solid substrate;
l) is conjugated to another chemical moiety; or

- m) comprises a detection or purification tag, including a FLAG, His6, or Ig sequence.
8. A composition comprising:
- 5 a) substantially pure combination of IL-B60 and CLF-1;
 - b) substantially pure combination of IL-B60 and CNTF-R;
 - c) a sterile polypeptide of Claim 5; or
 - 10 d) said polypeptide of Claim 5 and a carrier, wherein said carrier is:
 - i) an aqueous compound, including water, saline, and/or buffer; and/or
 - 15 ii) formulated for oral, rectal, nasal, topical, or parenteral administration.
9. A kit comprising a polypeptide of Claim 5, and:
- a) a compartment comprising said polypeptide; or
 - 20 b) instructions for use or disposal of reagents in said kit.
10. A method:
- a) of making an antibody which recognizes a complex of Claim 1, comprising inducing an immune response in an animal with said complex;
 - 25 b) of immunoselecting antibodies, comprising contacting a population of antibodies to a complex of Claim 1, and separating antibodies that bind from those which do not bind; or
 - 30 c) of formulating a composition, comprising admixing a complex of Claim 1 with a carrier.
11. A binding compound comprising an antigen binding site from an antibody, which antibody specifically binds
- 35 said complex of Claim 2d or 2e, but not to any of said mature polypeptides of SEQ ID NO: 2, 4, 12, 13, or CNTF-R.

12. The binding compound of Claim 11, wherein:
- a) said binding compound is:
 - i) in a container;
 - 5 ii) an Fv, Fab, or Fab2 fragment; or
 - iii) conjugated to another chemical moiety; or
 - b) said antibody:
 - i) is raised against a substantially pure complex of IL-B60 with CLF-1;
 - 10 ii) is raised against a substantially pure complex of IL-B60 with CNTF-R;
 - iii) is immunoselected;
 - iv) is a polyclonal antibody;
 - v) exhibits a Kd to antigen of at least 30 μ M;
 - 15 vi) is attached to a solid substrate, including a bead or plastic membrane;
 - vii) is in a sterile composition; or
 - viii) is detectably labeled, including a radioactive or fluorescent label.
- 20 13. A composition comprising:
- a) a sterile binding compound of Claim 12, or
 - b) said binding compound of Claim 12 and a carrier, wherein said carrier is:
 - 25 i) an aqueous compound, including water, saline, and/or buffer; and/or
 - ii) formulated for oral, rectal, nasal, topical, or parenteral administration.
- 30 14. A kit comprising said binding compound of Claim 11, and:
- a) a compartment comprising said binding compound; or
 - b) instructions for use or disposal of reagents in
 - 35 said kit.

15. A method of producing an antigen:antibody complex, comprising contacting under appropriate conditions a primate complex comprising:

- a) IL-B60 and CLF-1 polypeptides; or
 - 5 b) IL-B60 and CNTF-R polypeptides;
- with an antibody of Claim 11, thereby allowing said complex to form.

16. The method of Claim 15, wherein:

- 10 a) said complex is purified from other cytokines;
- b) said complex is purified from other antibody;
- c) said contacting is with a sample comprising a cytokine;
- d) said contacting allows quantitative detection of
- 15 said antigen;
- e) said contacting is with a sample comprising said antibody; or
- f) said contacting allows quantitative detection of said antibody.

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17. An isolated or recombinant nucleic acid:

- a) encoding said amino acid portions of Claim 5;
- b) encoding said amino acid portions of Claim 5, and
- 25 comprise a segment at least 30 contiguous nucleotides from SEQ ID NO: 1 or 3;
- c) which will coexpress a segment of at least seven contiguous amino acids from SEQ ID NO: 2 or 4, and a segment of at least seven contiguous amino acids from SEQ ID NO: 12 or 13; or
- 30 d) which will coexpress a segment of at least seven contiguous amino acids from SEQ ID NO: 2 or 4, and a segment of at least seven contiguous amino acids from CNTF-R.

35 18. The nucleic acid of Claim 17, which:

- a) encodes IL-B60 from a human;

- b) encodes CLF-1 from a human;
- c) encodes CNTF-R from a human;
- d) is an expression vector;
- e) further comprises an origin of replication;
- 5 f) comprises a detectable label;
- g) comprises synthetic nucleotide sequence; or
- h) is less than 6 kb, preferably less than 3 kb.

19. A cell comprising said recombinant nucleic acid
10 of Claim 18.

20. The cell of Claim 19, wherein said cell is:
- a) a prokaryotic cell;
 - b) a eukaryotic cell;
 - 15 c) a bacterial cell;
 - d) a yeast cell;
 - e) an insect cell;
 - f) a mammalian cell;
 - g) a mouse cell;
 - 20 h) a primate cell; or
 - i) a human cell.

21. A kit comprising said nucleic acid of Claim 18,
and:
- 25 a) a compartment comprising said nucleic acid;
 - b) a compartment further comprising a primate IL-
B60 polypeptide;
 - c) a compartment further comprising a primate CLF-1
polypeptide;
 - 30 d) a compartment further comprising a primate CNTF-
R polypeptide; or
 - e) instructions for use or disposal of reagents in
said kit.

22. A method:

- a) of making a duplex nucleic acid, comprising contacting a nucleic acid of Claim 17 with a complementary nucleic acid under appropriate conditions, thereby forming said duplex;
- b) of expressing a polypeptide, comprising expressing said nucleic acid of Claim 17, thereby producing said polypeptide; or
- c) of transfecting a cell, comprising contacting said cell under appropriate conditions with said nucleic acid of Claim 17.

23. An isolated or recombinant nucleic acid which encodes at least 5 contiguous amino acids of SEQ ID NO:

12, 13, or primate CNTF-R and:

- a) hybridizes under wash conditions of 30 minutes at 30° C and less than 2M salt to the coding portion of SEQ ID NO: 1; or
- b) exhibits identity over a stretch of at least about 30 nucleotides to a primate IL-B60.

24. The isolated nucleic acid of Claim 23, wherein:

- a) said contiguous amino acids number at least 8;
- b) said wash conditions are at 45° C and/or 500 mM salt; or
- c) said stretch is at least 55 nucleotides.

25. The recombinant nucleic acid of Claim 23, wherein:

- a) said contiguous amino acids number at least 12;
- b) said wash conditions are at 55° C and/or 150 mM salt; or
- c) said stretch is at least 75 nucleotides.

26. A method of modulating physiology or development of a cell or tissue culture cells comprising contacting

said cell with an agonist or antagonist of a complex comprising mammalian IL-B60 and:

- a) CLF-1; or
- b) CNTF-R.

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27. A method of:

- a) producing a complex of Claim 1, comprising coexpressing a recombinant IL-B60 with a recombinant CLF-1 or CNTF-R;
- 10 b) increasing the secretion of an IL-B60 polypeptide comprising expressing said polypeptide with CLF-1; or
- c) increasing the secretion of a CLF-1 polypeptide, comprising expressing said CLF-1 with an IL-B60.

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28. The method of Claim 27, wherein:

- a) said increasing is at least 3 fold; or
- b) said expressing is of a recombinant nucleic acid encoding one or both of said polypeptide and
- 20 CLF-1.

29. A method of screening for a receptor which binds said complex of Claim 1, comprising contacting said complex to a cell expressing said receptor under

25 conditions allowing said complex to bind to said receptor, thereby forming a detectable interaction.

30. The method of Claim 29, wherein said interaction results in a physiological response in said cell.